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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,568	02/13/2002	Kwang-Kyu Bang	8021-83 (SS-16184-US)	9896
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EXAMINER
NGUYEN, VIET Q

ART UNIT	PAPER NUMBER
2818	

DATE MAILED: 05/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/075,568

Applicant(s)

BANG ET AL.

Examiner

Viet Q Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on Response filed on 3/22/2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 10, 11 and 15 is/are rejected.
- 7) ☒ Claim(s) 7-9 and 12-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### DETAILED ACTION

The applicant's amendment filed on 3/22/2004 has been entered, considered, and made of record.

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims **1-6, 10-11, and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **McClure (5,262,994)**.

**McClure (see Fig.5)** obviously shows a construction of at least one column decoder for selecting a redundant column or particular cell to replace a defective cell. Particularly, see cols.11-16 description, discloses that the use of a plurality of fuses (62) in making up a fuse-box for the block select decoder circuit (50<sub>0</sub>) to select the redundant cell blocks, and another plurality of fuses (62) in making up a fuse-box for the redundant column decoder (52<sub>0</sub>) to further select particular columns belonging to the selected blocks. Col.11 (lines 45-54) also mentioned that "**...each of the redundant column decoders 36 include fuses by which redundancy is enabled for its associated redundant column 35, and by which the column address of the primary column to b replaced thereby is**

**specified.**" Thus, it is obvious that these fuses or fuse boxes are used to program an address of any defective normal cell with an address of a corresponding redundant cell (by specified through these redundant column decoders) as recited. Of course, it is further noted that **these fuses (62) are conventional fuses** (or **normally "closed" until programmed as open by blowing its connection state**), and thus they are **not "make-links" or "anti-fuse"** structures as recited in claim 1; however, the invention of McClure is not limited to only such conventional fuse structures as col. 11 (lines 55-60) further stated that "...in this embodiment, the fuses are preferably conventional fuses, such as polysilicon fuses, and are preferably **opened** by a laser, electrical overstress, or other conventional techniques. Of course, **other types of fuses, as well as antifuses, and other permanent programmable selection techniques, maybe used in the alternative to such fuses.**" Therefore, it would have been obvious to one skilled in this art (as suggested by McClure) that a plurality of "make-link" structure/types can also be similarly used in his type of redundant decoder scheme, if any, for programming redundant addresses to replace any defective cells as well as another obvious design variation. See entire teachings.

3. Claims **1-6, 10-11, and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shimizu (JP406295594A)**.

**Shimizu (se Fig.1)** shows a plurality of normal cell arrays (2) and at least a redundant cell array (1) to replace any defective cells, if any, found in the normal cells in arrays (2). Fig.2 further shows the inside structure of these cell arrays. For example, see reference's constitution, disclosed that the antifuses (17, 24), inside the arrays (1,2) are conducted (or closed) to inactivate (or disable) the defective cell array (1) thus enable programming an address of such defective cell possible with a corresponding redundant cell stored in the memory array (2). It is noted further that the address decoder circuit (logic gates 5) send the addresses to the gate of transistors (23), and each of these transistors has its source end directly coupled to the antifuses (24) inside the array (2), as the claimed "redundant selection circuit" for selecting a word line of a redundant cell corresponding to the address of the defect cell, and thus also inherently suggest claims 6 and 11 as well. It further would be obvious that redundant addresses could be in column or row configuration as well known in the art.

4. **Claims 1-6, 10-11, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mi et al (JP02000012699A).**

**Mi et al (see Fig.1)** clearly shows a fuse box (20) which concludes a plurality of make-links or antifuses (20), and each antifuse consists of upper electrode (28), lower electrode (23), and the antifuse is programmed by blowing the dielectric film bonded between these electrodes to make a permanent connection (see reference's solution). Noted that Fig.1 clearly shows the use of an OR

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configuration of a plurality of select transistors (NT1 to NTn) as the claimed "redundant selection circuit" for selecting a word line of a redundant cell corresponding to the address of the defect cell, if any, and each of these antifuses is shown clearly with its source end directly coupled to a particular make-link or antifuse (20), for programming and selecting the redundant cells as claimed, thus the structure also inherently suggest claims 6 and 11 as well. It would be obvious that redundant addresses could be column or row addresses as well known in the art.


5. Other claims **7-9 and 12-14** contain allowable subject matter over prior arts of record.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Viet Q Nguyen whose telephone number is (571) 272-1788. The examiner can normally be reached on 7am-6pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (703) 308-4910. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
V. Nguyen  
5/19/2004

Viet Q Nguyen  
Primary Examiner  
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